

A Fluoropolymer Blend with High Ionic Conductivity

Field of the Invention:

The object of the invention is to provide a fluoropolymer blend with high ionic conductivity, more particularly, which is applicable to an electroactive polymer composite (EAPC) membrane housing excellent thermal resistance, acid-alkali resistance, mechanical strength, curvature, and flexibility.

Background of the Invention:

Common 3C video photoelectric products (computer, communication, and consumer electronics) are expected to continue to become the star industry for Taiwan after she entering the 21st century. The market requirement shows that the product specifications for monitors, laptop computers, desktop computers, cellular phones, and other data storage device have already developed lightness, thinness, shortness, smallness, and multifunction capabilities. These trends are expected to be widened to all the 3C video products. For thin plastic pieces, especially for the outer shell, the requirement for the characteristics of resistance to sound, vibration, heat, and electromagnetic waves has become a necessity. Nowadays, because of the limitation of materials, actuators of optical, thermal, and electric mechanisms cannot fulfill the requirement of the next generation for extra-lightness, -thinness, -shortness, -smallness, and low energy consumption. EAPC has the merits of lightness, elasticity, low power consumption, long life cycle, and quick reaction, and is the optimal choice for a brand new actuator. The actuators, manufactured by this material include: micro pumps, optical switches, grippers, fans, optical-valves, lens controllers, focus lenses, micro-mirrors, and active noise controllers, and may be applied in the products of machines, micro devices, 3C component assemblies, photoelectric devices and other artificial muscle for medical treatment. In tradition, the most typical ionic polymer for EAPC intelligent composite is Nafion. A membrane made by this material has narrow ionic passages, by which water or ion is transferred quickly. However, the passages are easily destroyed to interrupt the transfer due to the dehydration of the material. Also, the price of the material is